

Handwritten mark resembling a stylized 'R' or '2'.



UNITED STATES PATENT AND TRADEMARK OFFICE

Handwritten circled number '5'.

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,236	12/22/2000	Yoshihiko Suemura	043034/0163	7174

22428 7590 08/02/2004

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

HENNING, MATTHEW T

ART UNIT PAPER NUMBER

2131

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Handwritten signature or initials.

Office Action Summary

Application No.

09/742,236

Applicant(s)

SUEMURA, YOSHIHIKO

Examiner

Matthew T Henning

Art Unit

2131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/22/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/22/01+ 9/05/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

This action is in response to the communication filed on 12/22/2000.

DETAILED ACTION

1. Claims 1-19 have been examined.

Title

2. The title of the invention is acceptable.

Priority

3. The application has been filed under Title 35 U.S.C §119, claiming priority to Japanese application 11-367830, filed December 24, 1999.
4. The effective filing date for the subject matter defined in the pending claims in this application is December 24, 1999.

Information Disclosure Statement

5. The information disclosure statements (IDS) submitted on 3/22/2001 and 9/5/2003 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statements.

Drawings

6. The drawings filed on 7/30/2002 are acceptable for examination proceedings.

Specification

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

8. The abstract of the disclosure is objected to because

Line 3: The phrase "is disclosed" can be implied and therefore must be removed.

Line 10: The phrase "descrambler are" is grammatically incorrect.

Correction is required. See MPEP § 608.01(b).

9. The disclosure is objected to because of the following informalities:

Page 16 Line 17 recites "diagram of the scrambler" but the Fig. 24 depicts the descrambler.

Page 25 Lines 7 and 11 and Page 37 Lines 17 and 21 recite " $(243 - 1)$ " which the examiner believes to be incorrect and should actually read " $(2^{43} - 1)$ ".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki (U.S. Patent Number 5,663,820), and further in view of Manchester et al. ("IP Over SONET") hereinafter referred to as Manchester.

Shiragaki disclosed an optical switch with multiple input and output interfaces (See Shiragaki Fig. 3 Elements 19, 31, and 32) but Shiragaki failed to disclose a scrambler and descrambler at each input and output interface. Shiragaki did disclose that this switch is for a Synchronous Optical NETwork (SONET).

Manchester disclosed that in order to send IP data over a SONET, the bits being transmitted should be randomized and Manchester recommended that the pseudo-random Self-Synchronizing Scrambler and Descrambler, used in ATM on SONET, should be used for this purpose (See Manchester Page 139 Col. 1 Paragraph 4 and Figure 4). Manchester further disclosed that this scrambler is reset at startup (See Manchester Page 139 Col. 2 Paragraph 1).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Manchester to the invention of Shiragaki by placing self-synchronizing scramblers at the inputs and outputs of the switch of Shiragaki. This would have been obvious because the ordinary person skilled in the art would have been motivated to provide a randomized bit stream to the optical fiber in order to thwart malicious attacks directed towards controlling the transition density of the line and to ensure that line rate recovery was possible at the receiver.

Furthermore, in this combination, because the scramblers are all connected to the inputs of the same switch, it would have been inherent that they all simultaneously reset at the startup of the switch. It would also have been inherent that the descramblers be simultaneously reset after a propagation delay of the data through the

switch. This would have been inherent due to the nature of the descrambler being initialized by the scrambled data input to the descrambler.

12. Claims 2- 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Shiragaki and Manchester.

13. Claim 2 recites that the scramblers and the descramblers operate according to a predetermined system clock (it was inherent that the scramblers and descramblers operated according to a predetermined system clock in order for the shift registers of Manchester Figure 4 to operate as required by the scramblers), wherein the scramblers are simultaneously initialized at a first time point and thereafter are not reset (See Manchester Page 139 Col. 2 Paragraph 1), and the descramblers are simultaneously initialized at a second time point and thereafter are not reset, wherein the second time point is delayed from the first time point by a time period required for transferring a frame from an input interface to an appropriate output interface through the switch. It was inherent that the descramblers were initialized at a point in time after the initialization of the scramblers because the descramblers are initialized by the output of the scramblers, which is received through the switch after a propagation delay (See Manchester Page 139 Col. 2 Paragraph 1).

14. Claim 3 recites that the first time point is a time when the switching system starts up (See Manchester Page 139 Col. 2 Paragraph 1).

15. Claim 4 recites that the scramblers and descramblers are of frame synchronizing type. Manchester disclosed that the scrambling state at the end of a Synchronous Payload Envelope (SPE) (frame) is the beginning state for the next SPE (See

Manchester Page 139 Col. 1 Paragraph 7 – Col. 2 Paragraph 1). Therefore, each the descrambler received a synchronization state for a frame through the previous frame and was therefore frame synchronizing.

16. Claim 5 recites that a cycle of a pseudorandom pattern generated by the predetermined pseudorandom pattern generator is set to be longer than a length of the frame. Manchester disclosed that the scrambling state at the end of a SPE is the beginning state for the next SPE (See Manchester Page 139 Col. 1 Paragraph 7 – Col. 2 Paragraph 1). Therefore the pseudo-random pattern generated in the scrambler was longer than the length of an SPE (frame).

17. Claim 6 recites that the predetermined pseudorandom pattern generator uses a generator polynomial $1 + X^{43}$ (See Manchester Page 139 Col. 4 and Figure 4).

18. Claim 7 recites generating a scrambler state (held in the 43-bit shift register shown in Manchester Figure 4) indicating a pseudorandom pattern generated by the predetermined pseudorandom pattern generator (the scrambler) at predetermined intervals; sending the scrambler state to the scramblers so that the scramblers are simultaneously reset to the pseudorandom pattern indicated by the scrambler state (See Manchester Figure 4 Feedback line to the front of the register); and sending the scrambler state to the descramblers with a delay of a time period required for transferring a frame from an input interface to an appropriate output interface through the switch so that the descramblers are simultaneously reset to the pseudorandom pattern indicated by the scrambler state (See Manchester Page 139 Col. 1 Paragraph 7 – Col. 2 Paragraph 1).

19. Claim 8 is rejected for the same reasons as claim 4 above.
20. Claim 9 is rejected for the same reasons as claim 5 above.
21. Claim 10 is rejected for the same reasons as claim 6 above.
22. Claim 11 is rejected for the same reasons as claims 1 and 7 and further because Manchester disclosed assembling a frame and then sending it with the output of the scrambler, which is the scrambler state (See Manchester Page 140 Col. 1 Paragraph 2). Also, because the scrambler operates on frames from the HDLC framer, and also generates the pseudo-random pattern used for scrambling, the generator operates in frame timing.
23. Claim 12 recites that the scramblers are of self-synchronizing type (See Manchester Page 149 Col. 1 Page 4).
24. Claim 13 is rejected for the same reasons as claim 4 above.
25. Claim 15 is rejected for the same reasons as claim 5 above.
26. Claim 16 is rejected for the same reasons as claim 6 above.
27. Claims 17 and 18 are rejected for the same reasons as claims 1 and 7 wherein the reset pulse claimed is constituted by the feedback loop of Manchester Figure 4.
28. Claim 18 is rejected for the same reason as claims 1 and 7 above.
29. Claim 19 is rejected for the same reasons as claim 11 above wherein the reset circuit is constituted by the receiver in Figure 4 of Manchester.

Conclusion

30. Claims 1-19 have been rejected.

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Fujimura et al. (U.S. Patent Number 4,744,082) disclosed a synchronizing multiplexed encoding optical switch.
- b. Pospischil (U.S. Patent Number 4,774,104) disclosed a self-synchronizing scrambler.
- c. McNesby et al. (U.S. Patent Number 5,185,799) disclosed a SONET scrambler.
- d. Bergland et al. (U.S. Patent Number 5,317,658) disclosed an optical switch.
- e. Suemura et al. (U.S. Patent Number 5,687,181) disclosed a parallel error correction coder for use in a switch.
- f. Lang (U.S. Patent Number 5,835,602) disclosed a self-synchronous packet scrambler to be used with a SONET.
- g. Choi ("Parallel Scrambling Techniques for Digital Multiplexers") disclosed parallel synchronous frame encoding and decoding.
- h. Japanese Application 11127120 depicted an optical switch with encoders and decoders at the inputs and outputs of the switch.

Art Unit: 2131

32. Please direct all inquiries concerning this communication to Matthew Henning whose telephone number is (703) 305-0713. The examiner can normally be reached Monday-Friday from 9am to 4pm, EST.

If attempts to reach examiner by telephone are unsuccessful, the examiner's acting supervisor, Ayaz Sheikh, can be reached at (703) 305-9648. The fax phone number for this group is (703) 305-3718.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.



Matthew Henning
Assistant Examiner
Art Unit 2131



AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100